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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/127,341	07/31/98	DEADDIO M	11021.0001

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
2765	6

DATE MAILED: 08/02/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/127,341	Applicant(s) DEADDIO ET AL.	
	Examiner Steven F Vincent	Art Unit 2765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

1)☒ Responsive to communication(s) filed on *31 July 1998* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☒ Claim(s) *1-19* is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a)☐ All b)☐ Some * c)☐ None of the CERTIFIED copies of the priority documents have been:

1.☐ received.

2.☐ received in Application No. (Series Code / Serial Number) _____ .

3.☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

1. Claims 1 to 19 are presented for examination.

Specification

Content of Specification

(a) Title of the Invention: See 37 CFR 1.72(a). The title of the invention should be placed at the top of the first page of the specification. It should be brief but technically accurate and descriptive, preferably from two to seven words.

(b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.

(c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.

(d) Reference to a "Microfiche Appendix": See 37CFR 1.96(c) and MPEP § 608.05. The total number of microfiche and the total number frames should be specified.

(e) Background of the Invention: The specification should set forth the Background of the Invention in two parts:

(1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

(2) Description of the Related Art: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."

(f) Brief Summary of the Invention: A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical

cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(g) Brief Description of the Several Views of the Drawing(s): A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.

(h) Detailed Description of the Invention: A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. This item may also be titled "Best Mode for Carrying Out the Invention." Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

(i) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet. (37 CFR 1.52(b)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps.

(j) Abstract of the Disclosure: A brief narrative of the disclosure as a whole in a single paragraph of 250 words or less on a separate sheet following the claims.

(k) Drawings: See 37 CFR 1.81, 1.83-1.85, and MPEP § 608.02.

(l) Sequence Listing: See 37 CFR 1.821-1.825.

2. Claims 1 to 19 are objected to because of the following informalities: As shown in section (i) above, Claims must commence on a separate sheet. Appropriate correction is required.

Information Disclosure Statement

3. The information disclosure statement filed on April 6, 1999 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. Of the seven references cited, only one (Goldberg et al.) was provided. The Pitt article, "The Visitor Pattern and a Java Grep Utility", was found by the examiner during the prior art search.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 1 to 15 are rejected under 35 U.S.C. 102(b) based upon a public use or sale of the invention. J.P. Morgan discloses information system called Kapital in the Sloan Management Review of Winter1995 by Richard Pawson et al.

a. Kapital uses a declarative specification language as disclosed in Claim 1 as shown on the first column of page 41.

b. Kapital discloses templates as disclosed in Claims 3 to 10 as shown on the second column of page 41 and in the second column of page 42.

c. Kapital discloses data processing means with interface between financial events and process as disclosed in Claims 11 to 15 on page 41.

6. An issue of public use or on sale activity has been raised in this application. In order for the examiner to properly consider patentability of the claimed invention under 35 U.S.C. 102(b), additional information regarding this issue is required as follows: information on Kapital and the features given above.

Applicant is reminded that failure to fully reply to this requirement for information will result in a holding of abandonment.

7. Claims 1 to 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Eggenschwiler et al. Eggenschwiler disclosed in the Conference on Object Oriented Programming Systems Languages and Applications of October 1992 the ET++ SwapsManager. This is a system to use object oriented technology to construct financial applications.

Claim 1.

A system comprising means for processing financial data, wherein a declarative specification language is employed in the programming of such system in order to describe financial instruments.

Eggenschwiler discloses object-oriented language on page 166 (first column) and financial instruments, particularly swaps on page 169 (first column)

Claim 2.

The system of claim 1, wherein said language uses a set of basic building blocks known as "financial event templates".

Eggenschwiler discloses the building block concept in Figure 6 on page 172.

Claim 3.

The system of claim 2, wherein each financial event template represents one basic financial element and also represents all the state information associated with such financial element.

Eggenschwiler discloses the Problem Domain Component, which "encapsulate all domain specific data and functionality" on page 172 (first column). As is also shown in Figure 6, a financial event is shown which includes the yield curve, market rates and currency of that financial event.

Claim 4.

The system of claim 2, wherein a particular declarative specification represents a specific type of financial instrument by specifying how the financial component specifications relate to each other to describe such financial instrument.

Eggenschwiler discloses the relationships in figure 5 on page 171 and in figure 6 on page 172.

Claim 5.

The system of claim 4, wherein said declarative specification represents the "commercial terms" (the set of state information necessary to represent all of the financially relevant data for the given instrument) of such type of financial instrument.

Eggenschwiler discloses specification in figure 5 on page 171. Such items as YieldCurve as shown. The paragraph directly below this figure shows how a user would

see the various items related to a swap. Figure 1 also shows the various "commercial terms" for a swap.

Claim 6.

The system of claim 2, wherein parameterization of a declarative specification represents one instance of the type of financial instrument defined by the specification, and further wherein such combination of the declarative specification and parameters defines the static representation of the instance of such financial instrument.

Eggenschwiler discloses this feature in Section 3.3 on page 169 in the discussion of the ET++ SwapsManager Concepts.

Claim 7.

A process implemented within means for processing financial data that transforms static representation of a financial instrument as created in accordance with claim 6 into a timeline of inter-related event objects that is specific to the given static representation.

Eggenschwiler discloses scenarios in Figure 4 on page 170, which is a timeline of inter-related yields.

Claim 8.

The process of claim 7, wherein said timeline of inter-related event objects is composed of basic financial building blocks, known as "financial events or components", and constitutes in its entirety the financial event structure or macro structure of that particular financial instrument.

Eggenschwiler discloses objects to act as building blocks starting on page 169 (first column). The macro structure is shown in figures 5 and 6.

Claim 9.

A process as described in claim 7, wherein the financial event structure of an instance of a financial instrument can always be exactly reproduced by the process defined in claim 7, given the static representation of said financial instrument.

Eggenschwiler shows this feature in section 3.4 "Using the ET++ SwapsManager", which shows how a swap can be produced by assembling the various static objects.

Claim 10.

A process implemented within means for processing financial data wherein either the static representation of a financial instrument in accordance with claim 6 or the financial event structure of a financial instrument in accordance with claim 7 can be made persistent or distributed over a network.

Eggenschwiler discloses persistence in the first column of page 170 and the concept of multiple project families is disclosed in the first column of page 167.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 11 to 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kleckner et al (WO 94/20912), published on September 15, 1994, and further in view of

Rasala. Kleckner discloses an object oriented system for manipulating a financial instrument. Rasala discloses iterator and the traversal process as applied to the C++ programming in "A Model C++ Tree Iterator Class for Binary Search Trees" in the Proceeding of the 28th SIGCSE technical symposium on Computer Science Education in March 1997.

Claim 11.

A system comprising data processing means wherein a generic traversal process is employed that can be applied to the macro structure of a financial instrument to implement one or more functions that produce results based on this information.

Kleckner discloses a system for creating, structuring, manipulating and evaluating a financial instrument using C++ on the top of page 10. Kleckner does not specifically disclose a traversal process. Rasala discloses this traversal process as part of a tutorial for college computer science students as shown on page 72 and 76. Since Kleckner uses C++ to implement the system and the traversal process is inherent in the functionality of C++, it would have been obvious to add this to Kleckner's invention.

Claim 12.

The system of claim 11, wherein each said function is implemented as a specific extension of said generic traversal process to generate a specified type of result.

Kleckner discloses a system to generate a specific type of result in Fig. 8 and starting on page 18, lie 22. Kleckner does not specifically disclose a traversal process. Rasala discloses this traversal process as part of a tutorial for college computer science students as shown on page 72 and 76. Since Kleckner uses C++ to implement the

system and the traversal process is inherent in the functionality of C++, it would have been obvious to add this to Kleckner's invention.

Claim 13.

The system of claim 12, wherein each traversal process is based on a well defined interface between the financial events contained in the financial event structure of a financial instrument and said traversal process.

Kleckner discloses a system to generate a specific type of result in Fig. 8 and starting on page 18, lie 22. Kleckner does not specifically disclose a traversal process. Rasala discloses this traversal process as part of a tutorial for college computer science students as shown on page 72 and 76. Since Kleckner uses C++ to implement the system and the traversal process is inherent in the functionality of C++, it would have been obvious to add this to Kleckner's invention.

Claim 14.

The system of claim 13, wherein the action to be performed for each type of financial event is defined, in said specific traversal process, independently from the action for any other type of financial event.

Kleckner discloses a system to generate a specific type of result in Fig. 8 and starting on page 18, lie 22. Independence is shown on page 4, line 31. Kleckner does not specifically disclose a traversal process. Rasala discloses this traversal process as part of a tutorial for college computer science students as shown on page 72 and 76. Since Kleckner uses C++ to implement the system and the traversal process is inherent

in the functionality of C++, it would have been obvious to add this to Kleckner's invention.

Claim 15.

The system of claim 13, wherein the overall result of applying a function specific traversal process to the financial event structure of a financial instrument is a combination of applying all individual financial actions to the respective financial events in a prescribed way.

Kleckner discloses a system to generate a specific type of result in Fig. 8 and starting on page 18, lie 22. Figure 6 shows the combination of applying all individual financial action in a prescribed way. Kleckner does not specifically disclose a traversal process. Rasala discloses this traversal process as part of a tutorial for college computer science students as shown on page 72 and 76. Since Kleckner uses C++ to implement the system and the traversal process is inherent in the functionality of C++, it would have been obvious to add this to Kleckner's invention.

10. Claims 16 to 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klechner and Rasala as applied to claim 11 above, and further in view of Gould. Gould discloses double dispatch for use in C++ programming in "Double Dispatch with an Inverted Visitor Pattern" in the May 1998 edition of C/C++ Users Journal.

Claim 16.

The system of claim 11, wherein said traversal process is implemented via a double dispatch mechanism.

Klechner and Rasala disclose a financial instrument system with a traversal process, but does not disclose double dispatch. Gould discloses double dispatch using C++ and gives code to add this to a C++ program. This addition is an extension of the single dispatch functionality inherent in the C++ language as shown in the first paragraph of page 67. The addition of this functionality would be obvious to allow for more elegant and thus less costly programming.

Claim 17.

The system of claim 16, wherein said double dispatch mechanism selects the appropriate action for each financial event without predetermined knowledge of the over all referential structure of the financial event structure.

Claim 18.

The system of claim 16, wherein a nested double dispatch mechanism initiated inside the action for a given financial event can select the appropriate action for any financial event referred to locally within the financial event.

Claim 19.

The system of claim 18 wherein said nested double dispatch mechanism can be applied recursively to any level.

For Claims 17 to 19, Klechner and Rasala disclose a financial instrument system with a traversal process, but does not disclose double dispatch. Gould discloses double dispatch using C++ and gives code to add this to a C++ program. The functionality given in the above claims are inherent to the double dispatch operation or are inherent to an object-based financial instrument system. For example, the functionality of object

oriented programming assumes no predetermined knowledge of the actions as disclosed in Claim 17. Nested functions and recursive functions are common in iterative programming as disclosed in Claims 18 and 19.

This addition is an extension of the single dispatch functionality inherent in the C++ language as shown in the first paragraph of page 67. The addition of this functionality would be obvious to allow for more elegant and thus less costly programming.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. The following articles highlight other J.P. Morgan's object-oriented financial packages:

"Financial CAD's plug and play platform" in Wall Street & Technology of October 1997.

"Odyssey: J.P. Morgan's vision of derivative tranactions" in Wall Street & Technology of July 1998.

b. The following articles highlight object oriented development in finance:

"Grasping objects: Get ready for the upheaval" in Wall Street & Technology of December 1993.

"CAFÉ: A Complex Adaptive Financial Environment" in Proceedings of the IEEE/IAFE 1996 Conference on Computational Intelligence for Financial Engineering of March 1996.

"Hedging credit, market risk" in Wall Street & Technology of Spring 1998.

"An Intelligent Assistant for Financial Hedging" by Michel Benaroch et al, IEEE, 1991

"A risk management prototype using object-oriented APL" from Proceedings of the International Conference on APL of September 1994.

"An Intelligent Approach to Financial Evaluation" by Ross M. Miller, IEEE, 1991.

c. The following Patents disclose generating object oriented programs:

Lau (US 5,987,247), filed on May 9, 1997

Birsan et al. (US 6,023,578), filed on May 9, 1997

d. The following articles disclose information concerning the visitor pattern and double dispatch:

"The Visitor Pattern and a Java Grep Utility" in Dr. Dobb's Journal of June 1998.

"Non-Software Examples of Software Design Patterns" in Conference on Object Oriented Programming Systems Languages and Applications of October 1997.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven F Vincent whose telephone number is 703-305-9694. The examiner can normally be reached on M- F 8:30 am to 6:00 pm with first Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tod Swann can be reached on 703-308-7791. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-1396 for regular communications and 703-308-1396 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-3900.

Steven F. Vincent
July 27, 2000

ERIC W. STAMBER
PRIMARY EXAMINER